REMARKS

Favorable reconsideration of the above-identified application is respectfully requested in view of the following remarks.

The specification and Claims 1 and 2 are amended to correct minor grammatical and typographical errors. The amendments to Claims 1 and 2 do not narrow the claim scope.

On the top of page two of the Official Action, issues are raised regarding the Abstract of the Disclosure. Accordingly, the Abstract of the Disclosure is amended to better conform to U.S. Practice and address the noted issues.

Claims 1-7 are pending in this application, with Claim 1 being the only independent claim. The Examiner is thanked for indicating that Claims 2-7 define allowable subject matter. Thus, only Claim 1 is presently at issue.

Claim 1 defines a normally closed solenoid-operated valve having a cylindrical sleeve, a stationary element provided at one end of the sleeve, a movable element slidably inserted in the sleeve to face the stationary element and provided at its external surface with a communication groove which axially extends between axial opposite ends thereof for permitting the flow of operating fluid, and an electromagnetic coil for exciting the stationary element and the movable element. A closed wall is provided on at least one of a stationary element end surface of the stationary element facing the movable element and a movable element end surface of the movable element facing the stationary element to define a damper chamber therein. In addition, the normally closed solenoid-operated valve comprises a fixed throttle for making the damper chamber communicate with the communicating groove when the stationary element end surface and the movable element end

surface close the damper chamber as a result of the movable element excited by the electromagnetic coil being moved toward the stationary element.

As discussed in the present application, the provision of the fixed throttle operating together with the damper chamber advantageously reduces or restrains the operational noise that arises when the movable element is moved towards the stationary element. In addition, the movable element can move in a rather responsive manner to inhibit operational delay.

The Official Action rejects Claim 1 under 35 U.S.C. § 102(b) as being anticipated by the disclosure in U.S. Patent No. 3,523,676, hereinafter *Barker*.

Barker discloses a pulse solenoid valve that includes a valve seat 37, a plunger 18 having a plunger head 20 and fluid ducts 19, and a boss 13 provided with a projection 16. *Barker* discloses that the solenoid valve is configured to reduce axial rebound vibration through the use of Teflon™. That is, as described in column 3, line 70 to column 4, line 2 of *Barker*, conventional valve seats are made from metal, synthetic resin, or plastic material. With a rapidly vibrating plunger, rebound vibrations are inherent in the operation of a valve, thereby somewhat limiting the maximum flow attainable. In column 4, lines 8-18, *Barker* describes that the solenoid valve uses a valve plunger and valve seat combination that controls radial vibration to eliminate uncontrolled axial rebound vibrations of the valve plunger. This is achieved through use of a constrained conically shaped Teflon™ seat. *Barker* also describes in column 4, lines 10-13 that flow noise is substantially reduced by jacketing the valve plunger 18 with a Teflon™ sheath 39 for its entire length, while maintaining a sufficient amount of clearance between the outer cylindrical surface of the sheath. Further, in column 6, lines 34-37, *Barker* states it is also possible to

reduce the flow noise by inserting Teflon™ strips 40 in each of the four fluid ducts 19 that are formed in the plunger 18.

In setting forth the rejection of Claim 1 based on the disclosure in *Barker*, the Official Action indicates that the valve described in *Barker* includes a damper chamber. While the Official Action does not indicate the portion of the disclosed valve corresponding to the claimed damper chamber, it appears that perhaps the Official Action broadly interprets the space between the end of the plunger stop 17 and the end of the plunger 18 as constituting a damper chamber. However, taking into account this interpretation, it is respectfully submitted that the rejection is inappropriate because the valve disclosed in *Barker* does not include a fixed throttle as claimed. As set forth in Claim 1, the fixed throttle communicates the damper chamber with the communication groove when the stationary element end surface and the movable element end surface close the damper chamber as a result of the movable element being moved toward the stationary element by virtue of excitation of the electromagnetic coil. *Barker* does not disclose any structure communicating the damper chamber with a communication groove when the end surface of the boss 13 and the end surface of the plunger 18 close a damper chamber as a result of the plunger 18 being moved toward the boss 13 upon operation of the coil 3.

The Official Action takes the position that the fluid ducts 19 disclosed in *Barker* correspond to the claimed communication groove. The Official Action also observes that these same fluid ducts 19 also correspond to the claimed fixed throttle. However, this interpretation is not consistent with the claim wording. That is, as noted above, Claim 1 recites that the fixed throttle communicates the damper chamber with the communication groove when the stationary element end surface

and the movable element end surface close the damper chamber as a result of the movable element being moved toward the stationary element by virtue of excitation of the electromagnetic coil. The fluid ducts 19 disclosed in *Barker* do not communicate the space between the end of the plunger stop 17 and the end of the plunger head 20 (i.e., the purported damper chamber) with the fluid ducts 19 (i.e., the communication groove). That is, the fluid ducts 19 cannot correspond to both the communication groove and the fixed throttle as claimed because the fluid ducts 19 do not communicate a damper chamber with itself when the boss 13 end surface and the plunger 18 end surface close a damper chamber as a result of the plunger 18 being moved toward the stationary boss 13 upon excitation of the electromagnetic coil 3.

The difference noted above can be better appreciated by considering that, in the case of the valve disclosed in *Barker*, surface tension of the operating fluid can keep the plunger 18 and the boss 13 in close contact with each other after energization of the coil 3 has stopped. That is, when the plunger 18 is moved into contact with the boss 13, the space between the end of the plunger 18 and the end of the boss 13 is fluid-tight and it is possible that the urging force of the spring 15, acting in opposition to the surface tension of the operating fluid, may be insufficient to reliably move the plunger 18 to the closed position. On the other hand, with the claimed construction of the normally closed solenoid-operated valve recited in Claim 1, the likelihood of the same difficulties occurring is reduced because of the fixed throttle. That is, the fixed throttle makes the damper chamber communicate with the communicating groove when the stationary element end surface and the movable element end surface close the damper chamber as a result of the movable element

being moved toward the stationary element through excitation of the electromagnetic coil. Thus, a fluid-tight damper chamber is not created and surface tension of the operating fluid will not hinder movement of the movable element in the same way as note above in connection with the valve described in *Barker*. Thus, relatively reliable and rapid movement of the movable element can occur.

For at least the reasons discussed above, it is respectfully submitted that *Barker* does not disclose a normally closed solenoid-operated valve having the claimed combination of features recited in Claim 1. Accordingly, withdrawal of the anticipatory rejection based on the disclosure in *Barker* is respectfully requested.

Early and favorable action with respect to this application is earnestly solicited.

Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

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